

**APPENDIX A**  
**GLOSSARY OF NOISE TERMINOLOGY**

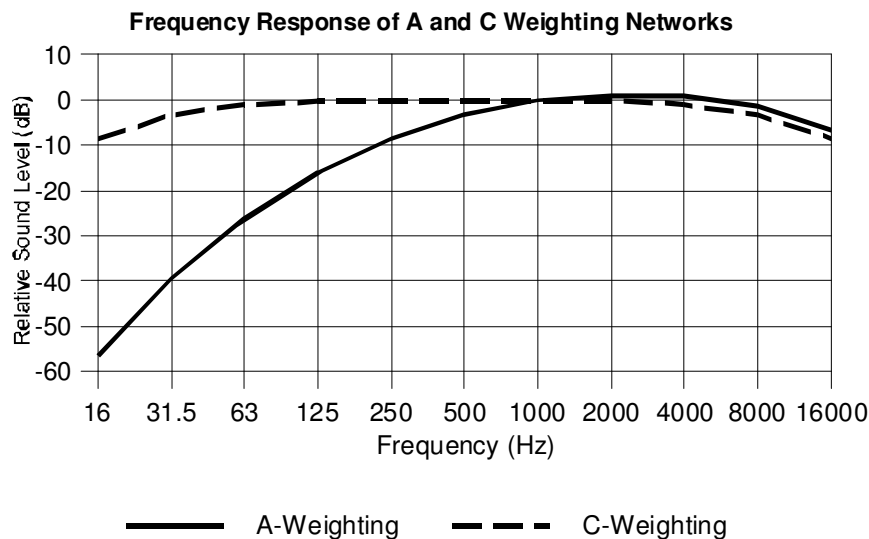
## APPENDIX A: GLOSSARY OF NOISE TERMINOLOGY

**Ambient or Background Noise:** The ambient noise from all sources other than the sound of interest (i.e. sound other than that being measured). Under most MOE guidelines, aircraft overflights and train noise, due to their transient nature, are normally excluded from measurements of background noise.

**Attenuation:** The reduction of sound intensity by various means (e.g., air, humidity, porous materials, etc.).

**dB - Decibel:** The logarithmic units associated with sound pressure level, sound power level, or acceleration level. See sound pressure level, for example.

**dBA - Decibel, A-Weighted:** The logarithmic units associated with a sound pressure level, where the sound pressure signal has been filtered using a frequency weighting that mimics the response of the human ear to quiet sound levels. The resultant sound pressure level is therefore representative of the subjective response of the human ear. A-weighted sound pressure levels are denoted by the suffix 'A' (ie. dBA), and the term pressure is normally omitted from the description (i.e., sound level or noise level).



**dBC - Decibel, C-Weighted:** The logarithmic units associated with a sound pressure level, where the sound pressure signal has been filtered using a frequency weighting that mimics the response of the human ear to loud sound levels. C-weighted sound pressure levels are denoted by the suffix 'C' (ie. dBC). C-weighted levels are often used in low-frequency noise analysis, as the filtering effect is nearly flat at lower frequencies.

**dBL or dBLin - Decibel, Linear:** The logarithmic units associated with a sound pressure level, where the sound pressure signal is unfiltered, and represents the full spectrum of incoming noise.

**Calibrator (Acoustical):** A device which produces a known sound pressure on the microphone of a sound level measurement system, and is used to adjust the system to standard specifications.

**Directivity Factor (Q)** (also, **Directional** or **Directionality Factor**): A factor mathematically related to Directivity Index, used in calculating propagated sound levels to account for the effect of reflecting surfaces near to the source. For example, for a source in free space where the sound is radiating spherically,  $Q = 1$ . For a source located on or very near to a surface (such as the ground, a wall, rooftop, etc.), where the sound is radiating hemispherically,  $Q = 2$ . This accounts for the additional sound energy reflecting off the surface, and translates into a +3 dB add.

**Energy Equivalent Sound Level ( $L_{eq}$ )**: An energy-average sound level taken over a specified period of time. It represents the average sound pressure encountered for the period. The time period is often added as a suffix to the label (e.g.,  $L_{eq}(24)$  for the 24-hour equivalent sound level).  $L_{eq}$  is usually A-weighted. An  $L_{eq}$  value expressed in dBA is a good, single value descriptor of the annoyance of noise.

**Exceedance Noise Level ( $L_N$ )**: The noise level exceeded N% of the time. It is a statistical measure of the noise level. For highly varying sounds, the  $L_{90}$  represents the background noise level,  $L_{50}$  represents the median or typical noise level, and  $L_{10}$  represents the short term peak noise levels, such as those due to occasional traffic or a barking dog.

**Far Field**: Describes a region in free space where the sound pressure level from a source obeys the inverse-square law (the sound pressure level decreases 6 dB with each doubling of distance from the source). Also, in this region the sound particle velocity is in phase with the sound pressure. Closer to the source where these two conditions do not hold constitutes the “near field” region.

**Free Sound Field (Free Field)**: A sound field in which the effects of obstacles or boundaries on sound propagated in that field are negligible.

**Frequency**: The number of times per second that the sine wave of sound or of a vibrating object repeats itself, now expressed in hertz (Hz), formerly in cycles per second (cps).

**Hertz (Hz)**: Unit of measurement of frequency, numerically equal to cycles per second.

**Human Perception of Sound**: The human perception of noise impact is an important consideration in qualifying the noise effects caused by projects. The following table presents a general guideline.

| Increase in Noise Level (dB) | Perception   |
|------------------------------|--|
| 3 or less                    | insignificant due to imperceptibility                  |
| 4 to 5                       | just-noticeable difference                             |
| 6 to 9                       | marginally significant                                 |
| 10 or more                   | significant, perceived as a doubling of sound exposure |

**Impact Sound:** The sound produced by the collision of two solid objects, e.g., footsteps, dropped objects, etc., on an interior surface (wall, floor, or ceiling) of a building. Typical industrial sources include punch presses, forging hammers, etc.

**Impulsive Noise:** a) Single or multiple sound pressure peak(s) (with either a rise time less than 200 milliseconds or total duration less than 200 milliseconds) spaced at least by 500 millisecond pauses, b) A sharp sound pressure peak occurring in a short interval of time.

**Infrasonic:** Sounds of a frequency lower than 20 hertz.

**Insertion Loss (IL):** The arithmetic difference between the sound level from a source before and after the installation of a noise mitigation measure, at the same location. Insertion loss is typically presented as a positive number, i.e., the post-mitigation sound level is lower than the pre-mitigation level. Insertion loss is expressed in dB and is usually specified per 1/1 octave band, per 1/3 octave band, or overall.

**Low Frequency Noise (LFN):** Noise in the low frequency range, from infrasonic sounds (<20 Hz) up to 250 Hz.

**Masking:** a) The process by which the threshold of audibility for a sound is raised by the presence of another (masking) sound, or b) The amount by which the threshold of audibility of a sound is raised by the presence of another (masking) sound.

**Near Field:** The sound field very near to a source, where sound pressure does not obey the inverse-square law and the particle velocity is not in phase with the sound pressure.

**Noise:** Unwanted sound.

**Noise Level:** Same as Sound Level, except applied to unwanted sounds.

**Peak Sound Pressure Level:** Same as Sound Pressure Level except that peak (not peak-to-peak) sound pressure values are used in place of RMS pressures.

**Quasi-Steady Impulsive Noise:** Noise composed of a series of short, discrete events, characterized by rapid rise times, but with less than 0.5 seconds elapsing between events.

**RMS Sound Pressure:** The square-root of the mean-squared pressure of a sound (usually the result of an RMS detector on a microphone signal).

**Reverberant Field:** The region in a room where the reflected sound dominates, as opposed to the region close to the noise source where the direct sound dominates.

**Sound:** a dynamic (fluctuating) pressure.

**Sound Exposure Level (SEL):** An  $L_{eq}$  referenced to a one second duration. Also known as the Single Event Level. It is a measure of the cumulative noise exposure for a single event. It provides a measure of the accumulation of sound energy over the duration of the event.

**Sound Intensity:** The sound energy flow through a unit area in a unit time.

**Sound Level Meter:** An instrument comprised of a microphone, amplifier, output meter, and frequency-weighting networks which is used for the measurement of noise and sound levels.

**Sound Pressure Level (SPL):** The logarithmic ratio of the RMS sound pressure to the sound pressure at the threshold of hearing. The sound pressure level is defined by equation (1) where  $P$  is the RMS pressure due to a sound and  $P_0$  is the reference pressure.  $P_0$  is usually taken as  $2.0 \times 10^{-5}$  Pascals.

$$(1) \quad \text{SPL (dB)} = 20 \log(P_{\text{RMS}}/P_0)$$

**Sound Power Level (PWL):** The logarithmic ratio of the instantaneous sound power (energy) of a noise source to that of an international standard reference power. The sound power level is defined by equation (2) where  $W$  is the sound power of the source in watts, and  $W_0$  is the reference power of  $10^{-12}$  watts.

$$(2) \quad \text{PWL (dB)} = 10 \log(W/W_0)$$

Interrelationships between sound pressure level (SPL) and sound power level (PWL) depend on the location and type of source.

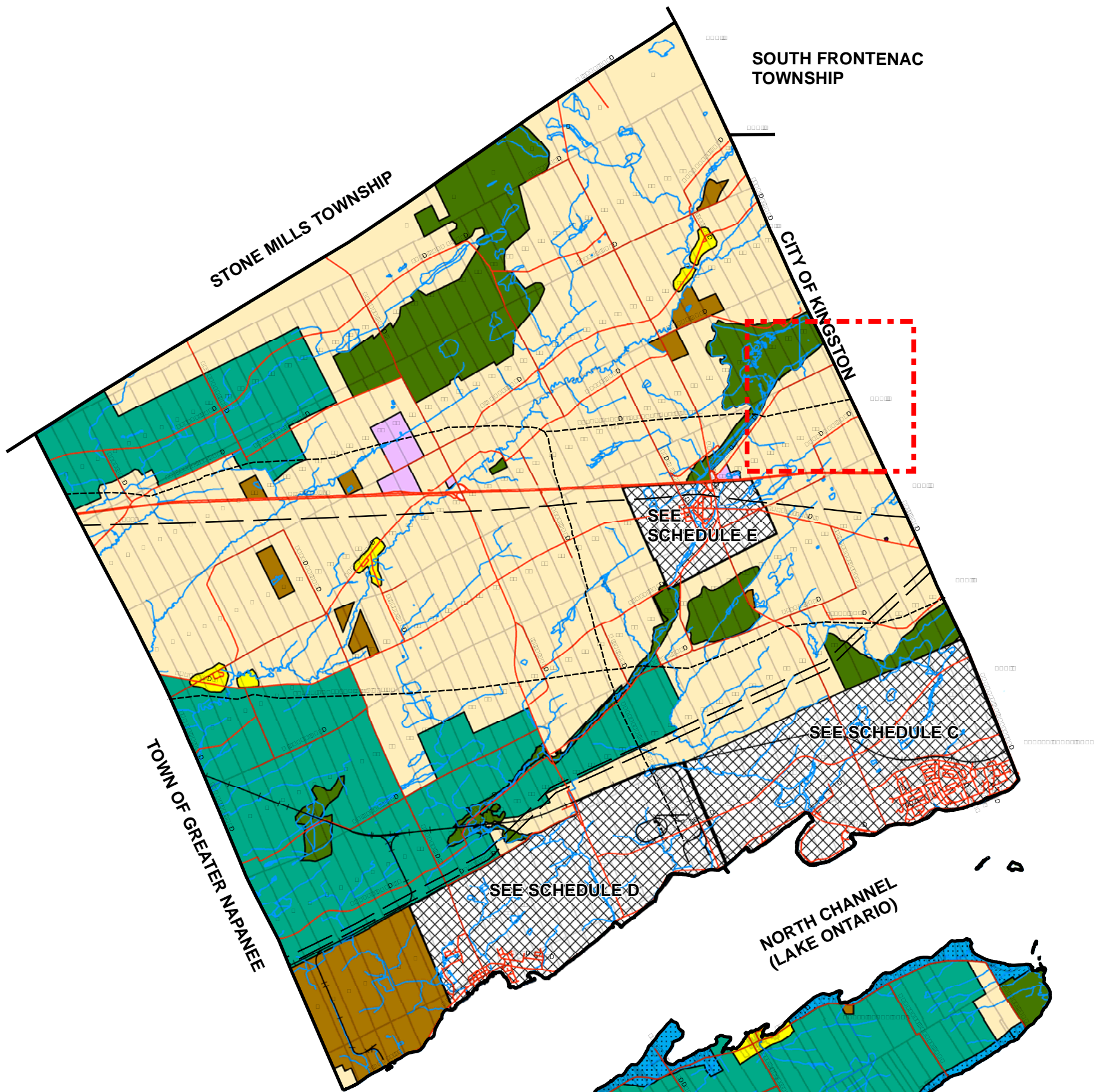
**Spectrum:** The description of a sound wave's resolution into its components of frequency and amplitude.

**Speed (Velocity) of Sound in Air:** 344 m/s (1128 ft/s) at 70°F (21 °C) in air at sea level.

**Threshold of Audibility (Threshold of Detectability):** The minimum sound pressure level at which a person can hear a specified frequency of sound over a specified number of trials.

**APPENDIX B**  
**LAND-USE ZONING MAPS**

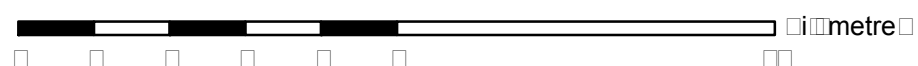
# Loyalist Township Official Plan - Schedule A Land Use Plan



## LEGEND

- Environmental Protection
- Agricultural
- Rural
- Hamlet
- Shoreline Residential
- Shoreline Residential - 2 designations
- Industrial
- Aggregate
- Resort Commercial
- Open Space
- Urban Area

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**LEGEND**








**CITY STRUCTURE CATEGORY**

-  COUNTRY AREA
-  BUSINESS DISTRICT
-  HOUSING DISTRICT
-  MAJOR INSTITUTION
-  CENTRE
-  CORRIDOR
-  FUTURE DEVELOPMENT AREA
-  MAJOR OPEN SPACE/ENVIRONMENTAL AREA

**DEVELOPMENT PHASING**

-  AREA SPECIFIC PHASING
-  SPECIAL PLANNING AREA
-  URBAN BOUNDARY

**OTHER FEATURES**

-  HAMLET
-  MAJOR ROAD
-  FUTURE MAJOR ROAD
-  RAILWAY
-  AIRPORT
-  MUNICIPAL BOUNDARY
-  WATERBODY

**NOTES**

COORDINATE SYSTEM UTM NAD83 ZONE 18, ROTATED 24°.

**OFFICIAL PLAN AMENDMENTS:**

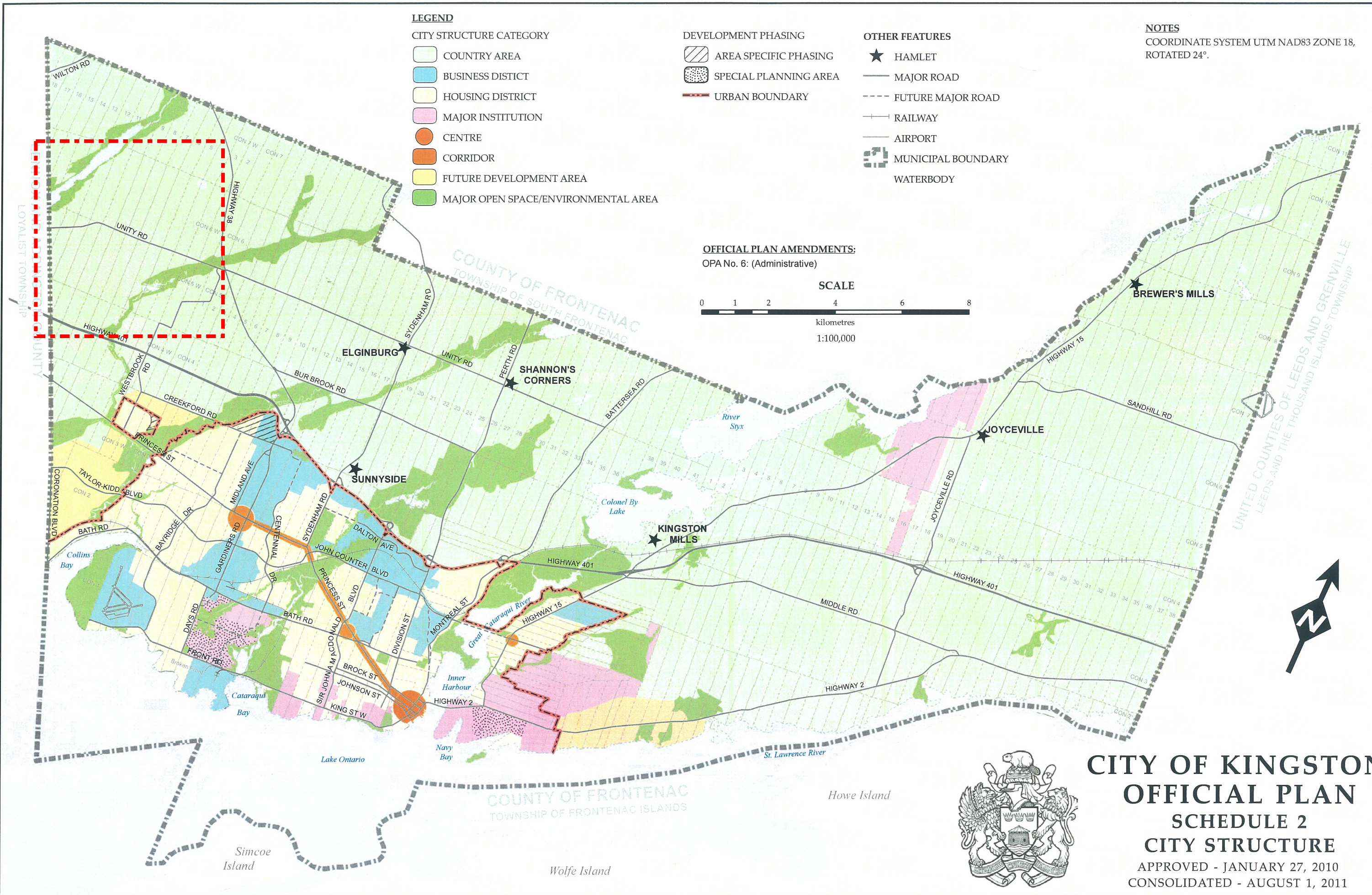
OPA No. 6: (Administrative)

**SCALE**



kilometres

1:100,000



**CITY OF KINGSTON**  
**OFFICIAL PLAN**  
**SCHEDULE 2**  
**CITY STRUCTURE**  
 APPROVED - JANUARY 27, 2010  
 CONSOLIDATED - AUGUST 1, 2011

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